

DPD-2156-60

14 March 1960

MEMORANDUM FOR : Chief, Development Branch, DPD  
SUBJECT : Possible Use of Proposed Camera System for OXCART

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1. Some time ago (late 1959), [ ] in discussions with the undersigned indicated that [ ] had been thinking of a possible follow-on system for the CHALICE program; and, asked if we were formulating any plans along this line and if so, would we like a camera proposal from them. Although the OXCART program (then known as GUSTO) was well along, no indication was given to [ ] that we were considering a follow-on program. [ ] was informed that if they desired to submit a proposed camera system, we would certainly review it in light of any future systems.

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2. On 16 February while visiting [ ] presented a proposal to me for a camera system known as the HR-74. This proposal, dated 29 January 1960, was for a camera with an 84 inch refractor type lens using mirrors to fold the optics. The size of the camera proposed was 35 $\frac{1}{2}$  inches long, 38 $\frac{1}{2}$  inches wide by 59 $\frac{1}{2}$  inches high.

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3. I discussed the above referenced proposal with [ ] in light of its possible use in the J75 U-2 aircraft as an improved camera system. It was pointed out that the camera was too large to fit in the present "Q" bay and therefore was entirely unsatisfactory. It was recommended, or rather suggested, that [ ] review their proposal with the view to reducing focal length to 60 or 72 inches using telephoto type optics and keeping system weight to that of the present B and still retain its growth potential for a future system such as indicated by the proposal. If [ ] does so, I would be willing to discuss the possibilities of building such a system with other personnel at Project Headquarters.

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4. On 8 March, [ ] visited Project Headquarters and presented their reworked proposal for a camera system known as the HR-74B. This camera would have a 48 or 60 inch telephoto refractor type lens. The camera would be 64 inches in length, 31 3/4 inches in width, and the

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height would be 52½ inches. The camera loaded would weigh 550 pounds. Due to the increased resolution in the optical system (120 plm), HYCON is indicating a ground resolution of 0.78 to 1.31 feet. Although the preliminary design is for the camera to fit in the U-2 "Q" bay, it will also fit in the "Q" bay of the CHALICE vehicle. (See attachment A) In reality, the proposed HR-74 B camera is a product improved B configuration. Shutter, film shuttle, film transport principles, all have been proven as sound approaches through their use on the B configuration.

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5. Although [ ] has not covered bay environment in their proposal, it is believed that the problem would not be as great with the 74B camera as with the P & S system. I have suggested to [ ] that they consider using in between the lens or a focal plane type shutter over the camera window to reduce the cycling rate load on their proposed shutter. This would be possible since camera windows look as if they would be rather small (approximately 7 inches square) and the shutter as pointed out by [ ] in their discussions on shutters would aid in control of the bay environment.

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6. [ ] has indicated a study phase for the above system would require approximately 90 to 120 days and cost about [ ]. They also indicated that one complete flyable prototype design could be built for a little under [ ]. Time to complete would be 11 to 12 months. Review of the complexity and the unknowns associated with [ ] camera design, it is felt Headquarters should give consideration to building an HR-74B camera configuration and testing it in a J75 U-2. Such an approach could be considered a back-up system should [ ] camera fail to achieve their design goals.

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7. The suggested approach for designing and manufacturing of the above proposed prototype would be to use the M & O facilities at [ ] and fund for the development under the present CHALICE program. In this manner, it is believed that one prototype system could be obtained by an increase of about [ ] for FY 61 at [ ].

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14 March 1960  
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